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DEPARTMENT OF THE ARMY FIELD MANUAL

FIELD ARTILLERY BATTALION LITTLE JOHN

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HEADQUARTERS, DEPARTMENT OF THE ARMY JUNE 1966

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 22 June 1966

FIELD ARTILLERY BATTALION LITTLE JOHN

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**Supersedes FM 6-56, 3 August 1961, including C 1, 6 November 1963.*



CHAPTER 1

INTRODUCTION

1. Purpose and Scope

a. This manual is a guide for artillery commanders at all levels for the employment of the LITTLE JOHN battalion. It covers organization; command; communication; principles of employment; reconnaissance, selection, and occupation of position; organization of position; security; survey, administration and logistics; and training. It also covers the employment of the unit in an airmobile role. The manual applies to units organized as a battalion under TOE 6-565.

b. This manual supplements FM 6-20-1, FM 6-20-2, and FM 6-140 by presenting information peculiar to the LITTLE JOHN battalion and by emphasizing established field artillery principles and techniques in their application to this type of system. Each of the referenced manuals should be studied in conjunction with this manual. Classified information pertaining to the LITTLE JOHN system is contained in FM 6-40-1A, FM 101-31-2, and TM 9-1100-212-12.

c. The material presented herein is applicable without modification to limited and general war, (either nuclear or conventional) internal defense and internal development assistance operations, and cold war operations.

d. The Department of Defense approved safety rules for peacetime operational use of the LITTLE JOHN system are published in TM 9-1100-212-12. Commanders must insure that appropriate personnel are fully familiar with the rules.

e. Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comment should be keyed to the specific page, paragraph, and line of the text in which change is recommended. Reasons should be provided for each comment to insure

understanding and complete evaluation. Comments should be forwarded direct to Commanding Officer, U.S. Army Combat Developments Command Artillery Agency, Fort Sill, Oklahoma 73503. Changes involving safety to personnel should be transmitted by electrical means.

2. References

Appendix I contains a list of publications pertaining to the LITTLE JOHN system.

3. Mission

a. The mission of the LITTLE JOHN unit is to provide field artillery fires in general support of a field army/corps, division, or brigade; or to reinforce the fires of other artillery units.

b. In the operations involving internal defense and internal development assistance, LITTLE JOHN battalion may be attached or assigned to an independent task force, MAAG, Mission, or Military Assistance Command (MAC), and may be employed in direct or general support of host country (MC) and/or US forces conducting operations in a particular area such as corps, division, and province.

c. The LITTLE JOHN battalion may be assigned or attached to an Airborne or Airmobile Division Artillery for the purpose of providing organic nuclear and chemical fire support.

4. Description of LITTLE JOHN System

a. The 318-mm rocket MGR-3A (fig. 1) is a free-flight, fins-stabilized, solid propellant, field artillery rocket designed to be fired from a rail-type launcher. It has range capabilities of 3,000 to 20,400 meters. The probable error of the MGR-3A varies with the range and is listed in the firing tables for range, deflection, and height of burst. Warhead sections used with this rocket include nuclear, high explosive, chemical, and practice types.

MAIN CHARACTERISTICS	
Standard gross weight	778.6 pounds
Warhead section weight	262 pounds
Empty weight	536 pounds
Propellant weight	242.6 pounds
Maximum range	20,400 meters
Minimum range	3,000 meters

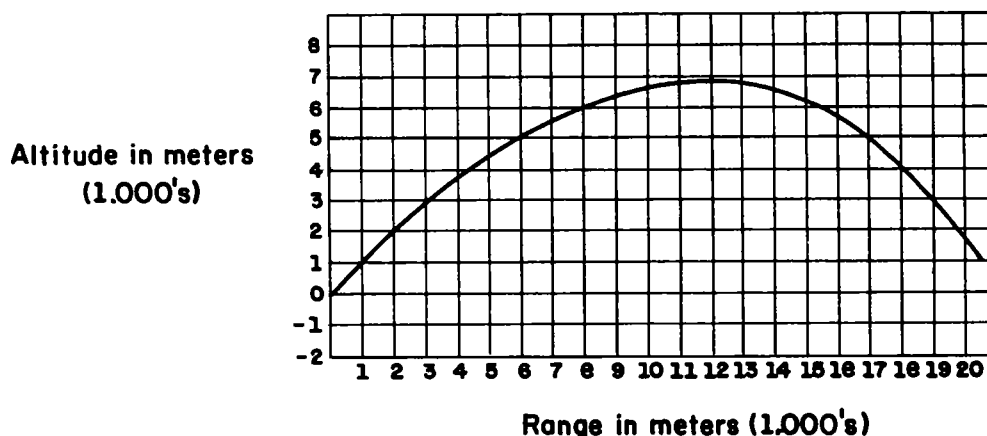
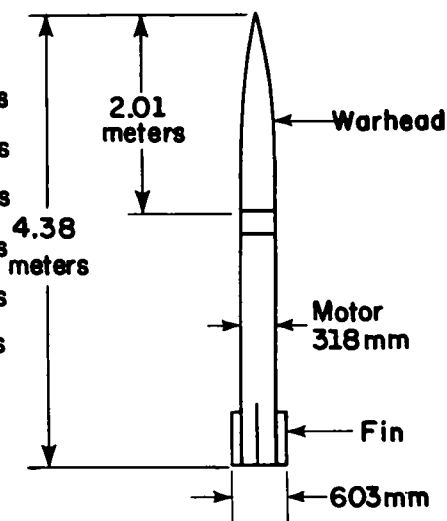


Figure 1. Main characteristics of LITTLE JOHN rocket (MGR-3A).

Note. The term "warhead section" as used in this manual includes the warhead adaption kit (if applicable), fuzing system, and skin section. The term "ammunition" refers to a complete LITTLE JOHN round.

b. The 318-mm rocket launcher and warhead section are transportable by transport helicopter and are designed to be airlifted in Phase I airborne operations. The launcher may be towed by standard military vehicles, or manhandled over short distances. The lightweight launcher, weighing approximately 1,300 pounds, is constructed primarily of aluminum alloy. It is equipped with a launcher beam assembly with steel rails on top. The rails provide 8 feet of guidance to the rocket when fired. The beam is traversed and elevated to position the rocket for firing.

c. A solid propellant rocket motor is used in the rocket. An insulating blanket M5 is used to maintain a uniform propellant temperature throughout, and, to some extent, to protect the metal parts of the rocket. This blanket should remain on the rocket until 15 minutes prior to firing. A rocket conditioning kit M85 consists of a tent shelter with a detachable liner, a portable heat source, flexible ducts, and accessories to supply the heat to the tent interior. The rocket must be maintained between -65° and $+120^{\circ}$ Fahrenheit for firing. When the ambient temperature is expected to go below the minimum firing temperature, the rocket must be heated, using the conditioning kit, for a minimum of 24 hours before firing. If conditions permit, the rocket should be heated

for 48 hours before firing. Blankets must remain on the rocket when it is being heated inside the rocket conditioning kit.

d. The rocket follows a ballistic trajectory and receives no guidance in flight. Stability of the rocket in flight is achieved through the use of four fins. The LITTLE JOHN rocket uses the principle of "spin on straight rail" (SOSR) whereby a spin is imparted to the rocket prior to ignition of the propellant. This spin, which is sustained throughout the flight, reduces the effects of thrust malalignment. The spinning is initiated when the lanyard is pulled. The lanyard actuates a spring drive motor which drives an interconnect shaft. The interconnect shaft drives a pinion gear in the rocket, which engages a ring gear and rotates the rocket. The initial movement pulls arming pins which allow activation of two thermal batteries. When the rotational rate of the rocket reaches approximately 3 revolutions per second (rps) centrifugal switches close, allowing electrical current from the thermal batteries to flow to the igniter and fire the rocket.

e. Sighting and laying equipment used to orient the launcher is essentially the same as that used with other artillery. The specific items of equipment used are the fire control

quadrant M1 or M1A1, the telescope mount holder M7, and sightunit M34A2C or M53E2.

f. Ancillary equipment used to handle and prepare the rocket for firing includes a rocket handling unit M572 mounted on a 2½-ton truck, which serves as a handling device and an assembly platform as well as a means of transport; a rocket conditioning kit M85 for conditioning or maintaining the rocket in arctic areas; an insulating blanket to maintain uniform rocket propellant temperature during storage and travel to firing positions; a transport assembly cart (trailer) for transporting and loading the rocket on the launcher; a cargo basket for transporting rocket equipment by helicopter; a wind measuring set to obtain wind velocity correction components; and other handling and test equipment for the rocket motor and warhead section.

g. The battalion is capable of carrying 28 rockets with organic equipment. Eight rockets are carried on rocket trailers, 16 on rocket handling units mounted on four 2½-ton trucks (four rockets per truck), and four on the launchers.

h. For a detailed description of the launcher and associated equipment, refer to appropriate publications listed in appendix I.

CHAPTER 2

ORGANIZATION

5. Field Artillery Battalion, LITTLE JOHN

a. General. The organization of the LITTLE JOHN battalion is shown in figure 2. The LITTLE JOHN battalion, rather than the battery, is the *unit* as defined in regulations (AR 335-60; AR 735-35; and Manual for Courts-Martial, United States, 1951). As such, the *battalion* is responsible for the administrative and logistic functions (ch. 9) prescribed for batteries in Department of the Army publication in addition to those functions prescribed for battalions. The subordinate batteries are not organized on separate tables of organization and equipment. Personnel and equipment authorizations for the batteries are included in the tables of organization and equipment for the battalion. The battalion is both the tactical and the administrative unit. In general and limited war environments, the smallest *fire unit* normally employed for independent operations, preparation of firing data, and conduct of fire is the *battalion*. See FM 6-20-1 for doctrinal guidance affecting all aspects of the rocket battalions' employment in internal defense and internal development assistance operations.

b. Headquarters Battery. The headquarters battery is organized to perform all administrative, supply, mess, survey, and fire direction functions and most of the maintenance and communication functions for the entire battalion. Responsibilities of subordinate elements in this battery are as follows:

- (1) Battery headquarters personnel have limited administrative responsibilities and are primarily concerned with the tactical operations of the battery.
- (2) The operations and intelligence section performs all fire direction and intelligence functions for the battalion.
- (3) The survey section performs fifth-

order (1:1,000) survey required for the battalion.

- (4) The liaison section establishes and maintains liaison with higher headquarters or supported units as required.
- (5) The communication platoon installs and maintains all field wire systems within the battalion except circuits within sections. This platoon operates radio sets in higher artillery headquarters nets. It also performs organizational maintenance on all communication equipment of the battalion.
- (6) The assembly and transport (A&T) section draws and transports rockets and warhead sections from the special ammunition supply point (SASP), removes them from their containers, assembles the rockets, performs authorized inspections and tests on the rockets and warhead sections to insure their serviceability, and then delivers them to the firing battery. This section transports and stores its portion of the basic load and special ammunition load (SAL). It also performs organizational maintenance on the complete round and associated test equipment.
- (7) The meteorological section provides ballistic meteorological messages for the battalion plus upper air data for fallout prediction as required. It also performs organizational maintenance on all ballistic meteorological equipment of the battalion.
- (8) The personnel section performs all administrative functions pertaining to personnel management for the battalion.

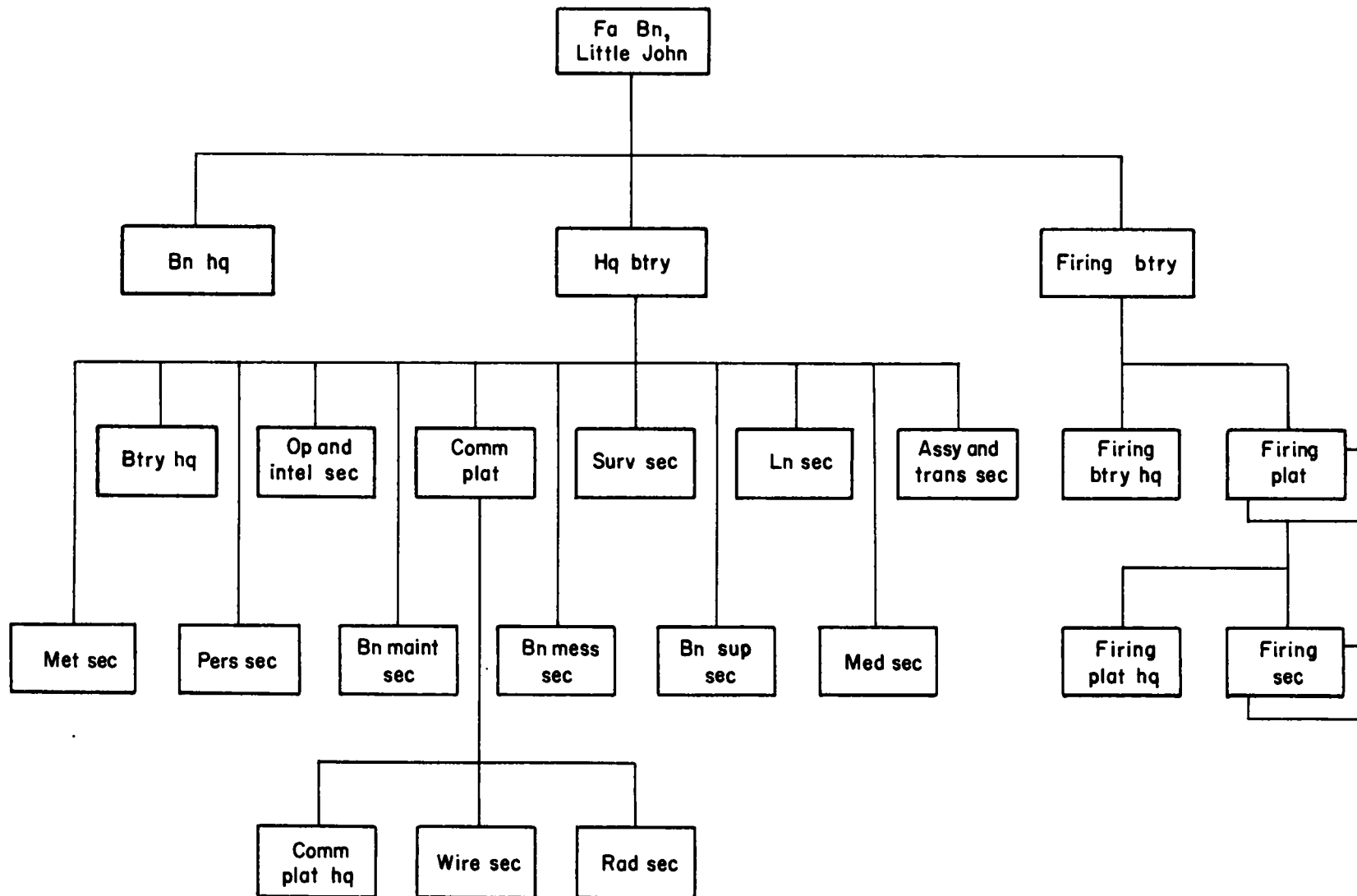


Figure 2. Field artillery battalion, LITTLE JOHN.

- (9) The maintenance section performs all organizational maintenance for the automotive and power generating equipment of the battalion. It also maintains the unit stockage prescribed load list (PLL) of repair parts required for all maintenance functions authorized within the battalion.
- (10) The mess section provides mess facilities for the battalion.
- (11) The supply section performs all supply functions for the battalion except as noted in (6) and (9) above. It also performs organizational maintenance on all small arms and self defense crew served weapons.
- (12) The medical section provides, first aid treatment and medical service for personnel in the battalion.

c. Firing Battery. The firing battery does not operate as a separate tactical unit and has no administrative functions. However, its organization, with the attachment of appropriate support elements from headquarters battery, permits limited independent action by its firing platoons from positions remotely located from the battery position. For extended independent actions which may be required in internal defense and internal development assistance operations, augmentation may be required (FM 6-20-1). Functions of elements of the firing battery are as follows:

- (1) Personnel of the firing battery headquarters assist the battery commander in the tactical operation of the battery.
- (2) The firing platoons load, test, and fire the rockets and transport their portion of the basic load and special ammunition load.

CHAPTER 3

COMMAND, CONTROL, AND COMMUNICATIONS

6. LITTLE JOHN Battalion

a. Battalion Commander. The battalion commander has all the responsibilities of a battalion commander as discussed in FM 6-20-2. His responsibilities for fire planning and fire support coordination are normally advisory in nature. The battalion commander also has responsibilities prescribed for a battery commander in AR 600-20. For disciplinary matters which are properly the prerogative of each battery commander, the battalion commander exercises discretionary supervision, leaving active control to the judgment of his subordinate commanders.

b. Battalion Staff. The discussion of battalion staffs in FM 6-140 is generally applicable to the LITTLE JOHN battalion. Responsibilities of staff officers in this battalion are as follows:

- (1) The battalion executive officer performs duties as described in FM 6-140. He is also the battalion S1.
- (2) The battalion S2 performs the normal duties of an artillery battalion S2 as described in FM 6-140. Administrative duties pertaining to safeguarding of classified material are a major consideration because of the volume of classified material in the unit.
- (3) The battalion liaison officer's duties are similar to those described in FM 6-20-2 and FM 6-140 for the general support battalion liaison officer, except that his duties with respect to fire support coordination and fire planning are normally advisory in nature. His duties may include transmitting fire plans, fire missions, and other information to the battalion.
- (4) The battalion S3 performs the normal duties of an artillery battalion S3 as described in FM 6-140. The S3 controls the fires of the battalion from the battalion fire direction center (FDC) as outlined in FM 6-40-1.
- (5) The S4 performs duties as described in FM 6-140. He coordinates and supervises the general maintenance and supply functions of the battalion for the commander. He is assisted by an automotive maintenance technician in charge of the maintenance section and a unit supply technician in charge of the supply section.
- (6) The duties of the battalion reconnaissance and survey officer conform to those discussed in FM 6-2 and FM 6-20-2. The reconnaissance and survey officer should be consulted before any plans are made which affect survey operations. This is particularly true of plans for establishing or changing locations of firing positions.
- (7) The communications officer exercises immediate staff supervision over the training of communication personnel and over the installation, operation, and maintenance of the battalion communication system. For a detailed list of duties, see FM 6-10 and FM 6-140.
- (8) The battalion surgeon performs the normal duties of a surgeon as outlined in FM 6-140. He advises the battalion commander and staff on all matters pertaining to sanitation and health of the command.
- (9) The battalion sergeant major performs the normal duties of a sergeant major as described in FM 6-140. The battalion sergeant major is also the troop education noncommissioned officer.

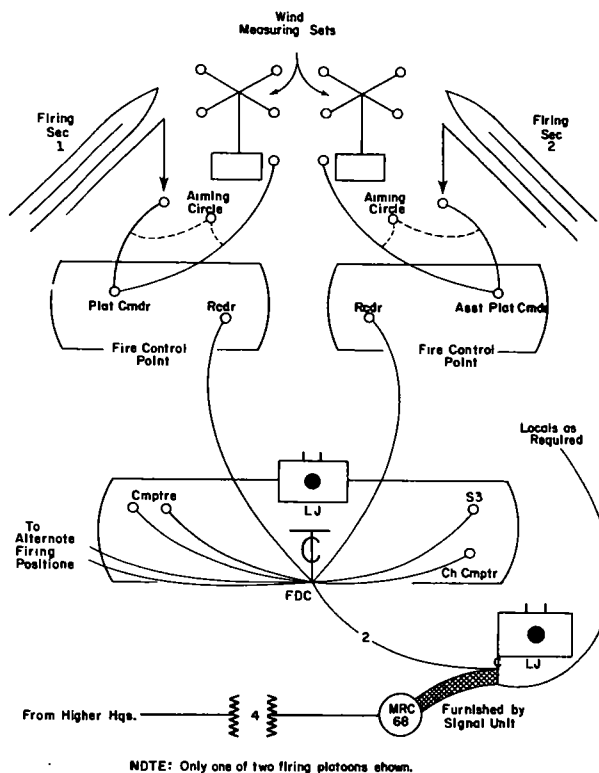


Figure 3. Type wire system—FA battalion, LITTLE JOHN.

c. *Headquarters Battery Commander.* The battery commander of the headquarters battery performs the duties described in FM 6-140. The personnel of the headquarters battery are commanded by the battery commander; however, they perform the greater part of their work under the supervision of battalion staff officers. The battery commander is assisted by the assistant communications officer, who also is the battery executive officer and communications platoon leader.

d. *Firing Battery Commander.* The firing battery commander is responsible for the training and tactical employment of all elements of the firing battery. He is also responsible for the operation and maintenance of all battery equipment. He supervises the firing battery in preparing for and executing fire missions. He is responsible for local security of the battery position area and firing positions.

7. Communication

a. All available means of communication must be utilized. No one means is considered

primary or relied on exclusively. The LITTLE JOHN battalion employs wire, radio, and messenger communication. Sound and visual means are employed when appropriate. Adequacy, reliability, and flexibility are prime considerations in the establishment and maintenance of all communication systems.

b. The communication platoon is responsible for installing all wire circuits within the unit, except those established within sections, and for establishing and maintaining messenger communication (fig. 3). When appropriate, the communication platoon of the battalion also operates radioteletype stations in the (AT) command/fire direction net of higher headquarters. A type radio net is shown at figure 4.

c. The communication platoon is equipped and organized to support a dual fire direction center capability for a limited period.

8. Fire Direction

The S-3 is the battalion gunnery officer. All fire missions for the battalion are normally computed at the battalion fire direction center.

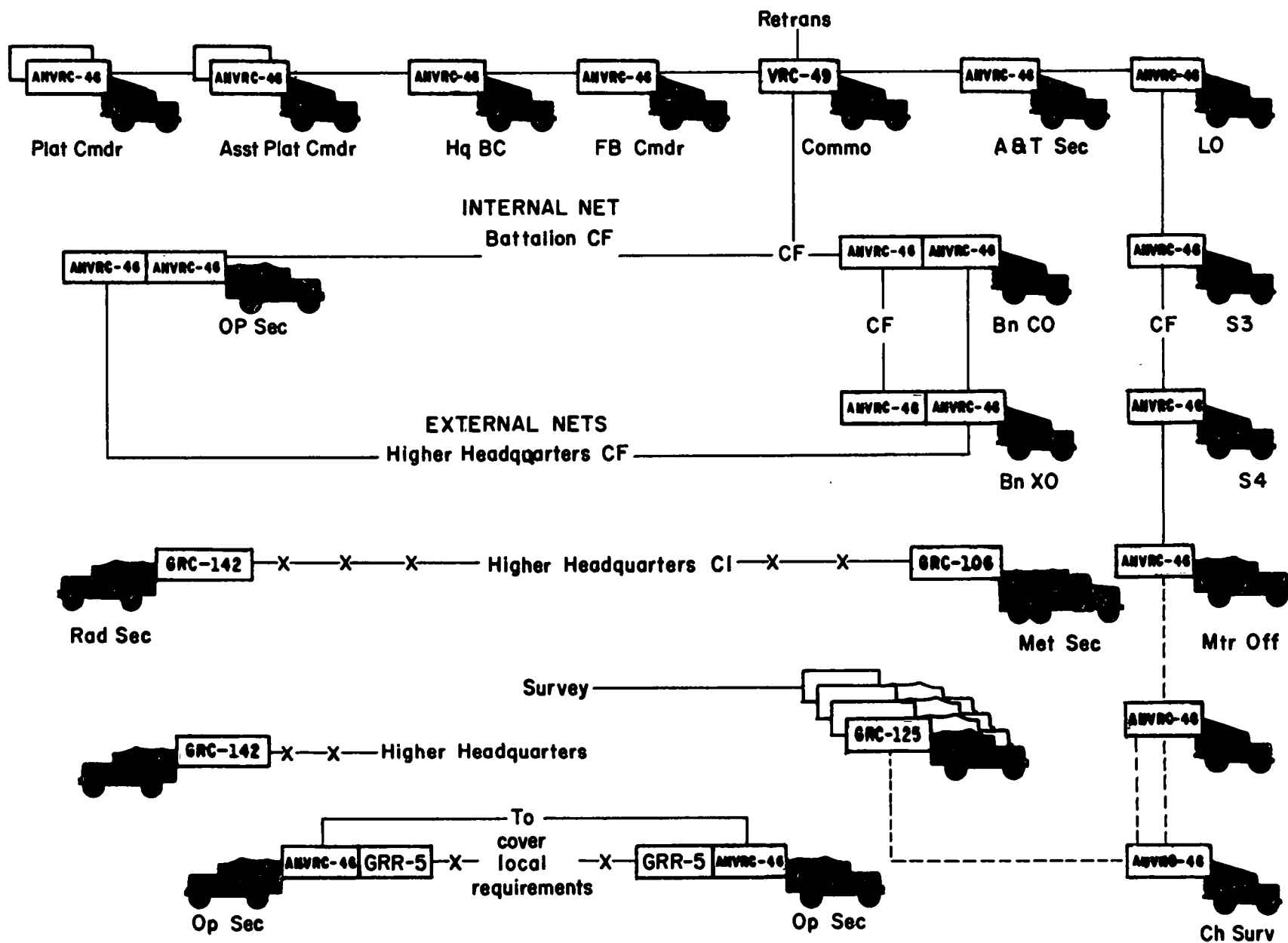


Figure 4. Type radio nets—FA battalion, LITTLE JOHN.

CHAPTER 4

TACTICAL EMPLOYMENT

9. Definitions

a. Position Area. A position area is defined as that area or areas where the unit command post, truck park, firing position(s), and administrative and logistical installations are located.

b. Firing Position. A firing position is defined as an area inside or separate from a position area, in which those elements of a unit essential for firing a rocket are located or are to be located.

10. Classification

The LITTLE JOHN is classified as a field artillery short-range rocket (FM 6-20-1).

11. Capabilities and Limitations of Employment

a. Capabilities. Capabilities of the LITTLE JOHN battalion are as follows:

- (1) The unit can supplement the firepower capabilities of cannon-type field artillery units with a variety of warheads. Types of warhead sections include nuclear, chemical, and high explosive.
- (2) The unit furnishes its portion of the fire direction, communication, liaison, survey, and meteorological support required by the mission.
- (3) The unit draws, transports, stores, assembles, tests, and maintains rockets and associated equipment.
- (4) The battalion provides unit level medical service, to include medical care and evacuation, establishes an aid station, and provides aidmen to the battalion's subordinate units.
- (5) The unit transports its prescribed basic load of ammunition.
- (6) All units are 100 percent mobile using organic surface transportation. Each battery helicopter transportable, and battery equipment may be delivered by parachute.
- (7) The supersonic speed and low trajectory of the LITTLE JOHN rocket make interception and destruction throughout its trajectory difficult. The speed also increases the possibility of obtaining tactical surprise, thereby increasing the effectiveness of its fires.
- (8) The firing platoons may operate independently at remote distances from each other and from the remainder of the battalion for short periods of time. In such instances, the platoons require augmentation with assembly and transport elements and fire direction elements. With similar augmentation, independent employment of an individual launcher is possible for pre-arranged missions; however, such employment should be limited to special situations.
- (9) The unit can fire during darkness and periods of inclement weather.
- (10) The unit can successfully attack targets so heavily defended by air defense units, fighter aircraft, or both, that employment of tactical air against the targets is not feasible.
- (11) For capabilities pertaining to nuclear employment, see FM 6-40-1A.
- (12) For capabilities pertaining to chemical employment, see FM 3-10B (when published) and FM 6-141-1.
- (13) For capabilities pertaining to internal defense and internal development assistance, see FM 6-20-1.

b. Limitations. Limitations of the LITTLE JOHN battalion are as follows:

- (1) Firing at small point targets requiring direct hits is seldom feasible because of the probable error of the weapon (see appropriate firing table). Provided a target is considered sufficiently critical (e.g., a key bridge), it can be destroyed within the system probable error with a nuclear warhead. The probable error may preclude fires in proximity to friendly troops and friendly civilians.
- (2) The response time of the system precludes effective engagement of targets of opportunity.
- (3) The LITTLE JOHN rocket has a minimum range of 3,000 meters.
- (4) When employing wind set readings, the maximum wind velocity which may be determined and corrected for is 50 miles per hour; however, if a visual meteorological section is available in the immediate vicinity, velocities up to 94 miles per hour may be determined and appropriate corrections applied to the launcher.
- (5) Simultaneous independent employment of all four launchers emplaced in widely separated positions is beyond the capability of the unit (*a*(8) above).
- (6) The unit is responsible for its local security but has only a minimum capability of defense against ground attack. The unit has no capability of active defense against air attack. The force commander must consider providing additional security for LITTLE JOHN units.
- (7) Particular emphasis must be placed on the considerations of adequate cover and concealment in all phases of the tactical employment of this unit. The characteristic dust cloud and debris raised by the blast of the motor upon firing and the flame and smoke trail of the rocket while in flight will normally disclose the firing position. The firing section must be prepared to displace immediately after firing.

- (8) For limitations pertaining to nuclear employment, see FM 6-40-1A and FM 101-31-2.
- (9) For limitations pertaining to internal defense and internal development assistance operations, see FM 6-20-1.
- (10) For limitations pertaining to chemical employment, see FM 3-10 and FM 3-10B.

12. Employment

a. The force artillery commander selects the general areas in which the LITTLE JOHN units under his control will be employed. In selecting these areas, he considers the nature of the tactical operation, the number and capabilities of artillery units under his control, the zone of action of the supported unit, the fire capabilities of the unit (para 4), the terrain, population, desired effects, the available natural camouflage, and the security situation. The LITTLE JOHN unit commander selects a position area and one or more alternate areas within the limits of the area assigned by the force artillery commander.

b. Firing positions will be determined primarily by the range limits of the system. When firing elements are located a long distance from the unit position area, control factors, such as communication and survey, must also be considered.

c. LITTLE JOHN units are separated laterally to reduce the possibility of more than one unit being significantly affected by a single nuclear attack. Primary and alternate positions should also be sufficiently separated to preclude enemy nuclear attack, directed at the primary position, from significantly affecting alternate positions.

d. The force artillery commander should select and reserve and number of position areas as far in advance as possible in order to allow the battalion adequate time for reconnaissance and preparation of positions.

e. The LITTLE JOHN battalion normally occupies one position area, or hide area (approximate dimensions 600 x 1200 meters) and has an alternate position reconnoitered for immediate displacement, when required. In addition, the battalion has numerous firing points or fir-

ing positions reconnoitered and surveyed. The battalion position area is normally selected to afford maximum concealment and camouflage. The cover afforded by draws and uneven terrain is exploited. A firing point is designed to be occupied by one firing section only for the length of time required to fire a mission using "shoot and scoot" tactics. It will normally be in the open or on the edge of a tree line. See figure 5 for a type LITTLE JOHN employment.

f. Transportation of the firing section to the firing point, and return, may be by organic prime mover ($\frac{3}{4}$ -ton truck) or by helicopter.

g. An essential element in the selection and preparation of a firing point is the reconnoitering of the exact route, foot-by-foot, to be taken from the time that the launcher leaves the nearest road, or helicopter landing zone, to the firing point. This route should be marked so that it can be readily identified under blackout conditions. In open terrain, this may have to be done each night at dusk with engineer's tape and taken up at first light to avoid compromising firing points. The exact location of the launcher, orienting station, and end of the orienting line must also be marked so as to be readily identifiable under blackout conditions.

h. Occasionally, platoons or firing sections may temporarily await an anticipated fire mission in a hide position in close proximity to a firing position. However, the battalion organization is inadequate to support this configuration over an extended period of time since there is only one mess for the entire battalion and since the austere TOE does not provide sufficient personnel for adequate security in this configuration. In considering which tactical posture should be assumed between that discussed in *e* or *h* above, the following are some of the factors which will be considered: desirability of dispersing LITTLE JOHN nuclear rounds in several locations for passive protection against enemy nuclear strikes; whether air superiority is achieved over the enemy; trafficability between hide positions and firing points; the ground infiltration threat and consequent requirement for local security; the anticipated time before a fire mission will be required; concealment available.

i. Normally, firing points will be separated

from the battalion by 2-3 kilometers. However, one emergency firing point should always be surveyed adjacent to the battalion hide position. If this firing point is ever used, the battalion will have to displace to an alternate position.

j. Commanders at all echelons must consider the use of and protection from chemical, biological, and radiological agents as a normal and essential element of system employment. For details on CBR decontamination, see TM 3-220. See FM 21-40 for guidance in defense against CBR agents.

13. Displacements

a. General. Authority to order displacements is as set forth in FM 6-20-1.

b. Frequency. In certain situations, frequent displacement of battalions or only the firing elements thereof may provide the best protection against enemy detection and attack. Since the LITTLE JOHN battalion is normally employed in areas within enemy cannon artillery range, counterbattery fire can be expected. The following considerations influence the frequency of displacements:

- (1) Capability of the battalion to support the operation and to deliver timely fire.
- (2) Missions, zone of action, and deployment of the maneuver elements.
- (3) The enemy's capability to locate the battalion position or portions thereof.
- (4) The enemy's capability to react promptly upon the discovery of the battalion position or portions thereof.
- (5) The availability of position areas.
- (6) Trafficability of terrain.
- (7) Time available for preparation of position.
- (8) Restrictions by higher headquarters.
- (9) Density of other units in the area.
- (10) In operations involving internal defense assistance, or cold war operations, security of the unit and/or probability of insurgent attacks may be the most important displacement considerations.

c. Methods. A battalion may displace by in-

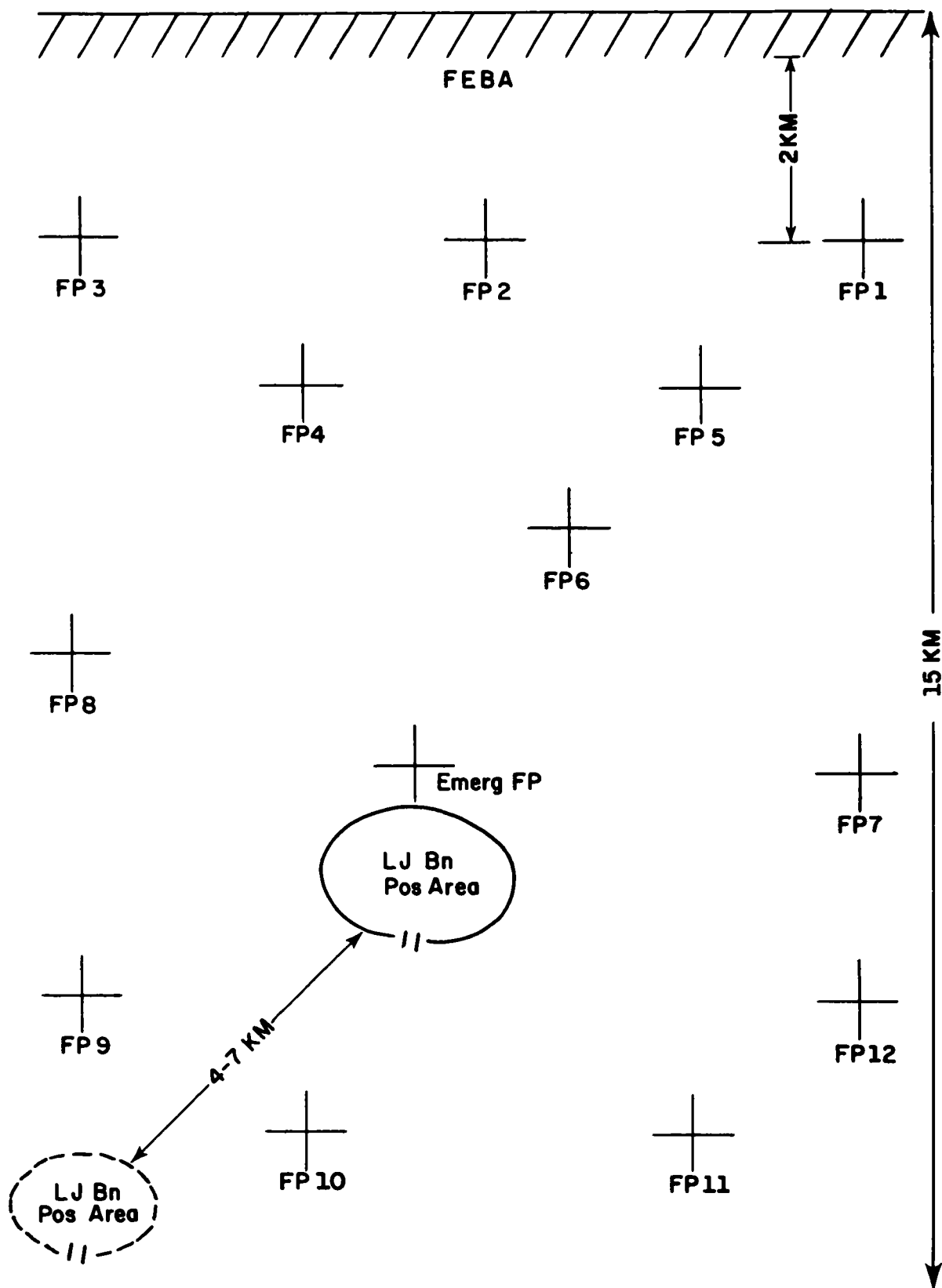


Figure 5. Type LITTLE JOHN employment.

filtration, in two or more echelons, or as a unit. When displacement during daylight is necessary, displacement by infiltration over multiple routes provides protection against attack and hinders enemy detection of new position areas. The LITTLE JOHN battalion has the capability of maintaining continuous fire support while displacing by echelon.

d. Time. To avoid disclosing the locations of battalion position areas, the force artillery commander should displace battalions during darkness, inclement weather, and other periods of limited visibility when possible.

e. Security in Internal Defense Assistance Operations. Security considerations may require displacement by unit convoy, reinforced with additional security elements. For a general discussion on convoy security, see FM 19-2, FM 19-25, FM 19-30, FM 31-16, FM 31-22, and the 7-series field manuals.

f. Communication Security. COMSEC must be strictly enforced especially throughout displacement operations. Consideration should be given to placing all stations on radio listening silence during the actual move.

14. Special Operations

a. General. Special operations are types of military operations which require specialized troops, equipment, or techniques. The terrain, weather, nature of the operation, or a combination of these factors may create the requirement. The characteristics of the LITTLE JOHN launcher and ground-handling equipment make the unit readily adaptable to special operations. Plans and estimates must be carefully detailed. Training for the operation must be based on the initial state of training and the type of operation planned. Liaison must be established early. The type of operation and plan of maneuver will dictate the applicability of centralized or decentralized control. For additional information, see FM 6-20-1, FM 6-20-2, and the manuals listed in *b* and *c* below.

b. Airborne and Airmobile. Airborne operations and techniques are discussed in full in FM 57-10, FM 57-100, and FM 100-5; airmobile operations are discussed in FM 57-35. Joint operations primarily envision entry into the airhead by parachute or assault aircraft.

Airmobile operations normally utilize Army aviation units but may be conducted as part of joint operations. See chapter 10 for further discussion of airmobile operations.

c. Adverse Terrain and Weather Conditions. The mobility and flexibility of the LITTLE JOHN unit allows advantageous employment under adverse terrain and weather conditions. See TM 9-1055-212-12 for instructions pertain to the operation of equipment under unusual conditions. See appendix I for applicable manuals in the FM 31-series.

15. Observation and Intelligence

a. The battalion has no target intelligence responsibilities but depends on higher artillery headquarters or the reinforced unit for producing this information (FM 6-20-1). Other combat intelligence functions are extremely limited, since the battalion has no observation or other intelligence collection agencies. The battalion depends on combat intelligence and other information disseminated by higher headquarters to fulfill its needs for knowledge of the enemy and friendly situation, terrain, and forecast of weather. The battalion commander supplements this information by reconnaissance, liaison, and personal contact so that he can obtain a thorough knowledge of the situation and terrain and be in a position to recommend position areas to the force artillery commander. In the internal defense and internal development assistance environment, the combat intelligence capability of the battalion will be enhanced by its close association with tactical ground elements and day-to-day contact with the local populace.

b. The battalion may be required to employ or assist in the employment of deception measures to prevent focusing enemy intelligence efforts on the unit area. These deception measures conform to the mission and counterintelligence and deception plans of higher headquarters. For further information on counterintelligence activities, see FM 6-20-1.

16. Fire Planning and Fire Support Coordination

a. The fire planning and fire support coordination functions of the battalion are normally

advisory in nature and are based on the tactical mission assigned to the battalion.

b. When a higher artillery headquarters or fire support coordination agency is planning and coordinating the fires of the battalion, the liaison officer of the battalion acts as an adviser on the capabilities and limitations of the LITTLE JOHN system.

c. Fires of the unit are planned, coordinated, and integrated with the fires and maneuver of other units in accordance with existing principles for the employment of fire support as set forth in FM 6-20-1.

d. Responsibility for surveillance of fires of the unit and for assessment of target damage is specified by the artillery commander assigning the fire mission.

e. Organization, procedures, and training must be directed toward reducing the time required for battalions to execute fire missions. Timely warning orders will assist the battalion in reducing reaction time.

17. Fire Direction Accuracy and Reliability

Two factors contribute markedly to the accuracy and reliability of fire direction in this unit. First: Use of forms to insure that all necessary factors are systematically entered into the computation in a logical sequence. Second: Completely independent computations by two teams, with the fire direction officer comparing their solutions to isolate any errors.

18. Time Sequence of Firing Operations

a. The initial preparations for firing include those procedures that can be conducted prior to the receipt of a fire mission. The time required for this phase of operation will vary according to the method of movement, the time of day, the weather, and the operational environment. With trained crews, no malfunctions, and reasonable weather conditions, the average times that can be used for planning purposes are shown in table I, appendix II. (FM 6-40-1A lists similar average time factors for use when planning nuclear fires). These average times should serve as intermediate training goals only. When a high state of unit training is achieved and teamwork and techniques are refined, the

times will be shortened. Conversely, it must be recognized that enemy interference, equipment breakdown, or faulty test indications will extend the times listed.

b. Table II, appendix II, gives the average times for firing operations for five separate tactical situations, with elapsed times derived from table I, appendix II. The use of FADAC equipment will further reduce reaction time in cases where gunnery computations contribute to increased times. The tactical situations shown are those most likely to be encountered in the field. The information in tables I and II will be of assistance to the commander for planning purposes and in reporting his unit's state of readiness to higher headquarters.

c. For planning factors and time sequence for LITTLE JOHN nuclear operations, see FM 6-40-1A.

19. State of Readiness

a. A maximum state of readiness, consistent with the situation, is fundamental to the effective tactical employment of LITTLE JOHN battalions. It is attained through the accomplishment of all possible actions which may be taken considering the method of deployment, the capabilities of friendly and enemy forces, and the characteristics of the LITTLE JOHN system.

b. Specific readiness requirements will be established by the force commander in the theater of operations. The LITTLE JOHN battalion commander is responsible for keeping the appropriate higher commander informed of the state of readiness of the battalion.

c. The states of readiness listed in (1) through (5) below reflect materiel readiness levels of the system and the desired state of training of the battalion. They are provided as a guide for adapting the system capabilities to theater readiness requirements. Distance factors may require that these states be modified.

(1) State I (Low Readiness)

- (a) Rockets and warhead sections are in their storage containers located in a centralized battalion exclusion area.
- (b) The firing section is located in the battalion position area.

- (c) When a fire mission is received, the assembly and transport section meets the firing section, and the rocket(s) will be assembled and loaded on the launcher(s).
 - (d) The firing section moves to a prepared firing position and completes the mission.
- (2) *State II* (Intermediate Readiness)
- (a) Assembly and transport section rocket handling units carrying rocket and warhead sections are located in a battalion exclusion area.
 - (b) Same as (1)(b) above.
 - (c) Same as (1)(c) above.
 - (d) Same as (1)(d) above.
- (3) *State III* (Advanced Readiness)
- (a) Rockets are assembled on rocket carts within the battalion exclusion area.
 - (b) Same as (1)(b) above.
 - (c) When a fire mission is received, the launcher is loaded and the firing section moves to a prepared firing position and completes the mission.
- (4) *State IV* (High Readiness)
- (a) The firing section, with a rocket on the launcher, is located in a hide area adjacent to a prepared firing position, and is committed to fire on a prearranged target on call.
 - (b) All possible measures to prepare the equipment prior to occupation of the firing position have been accomplished.
 - (c) Upon receipt of orders, the firing section occupies the firing position and completes the mission.
- (5) *State V* (Maximum Readiness)
- (a) The firing section is in a prepared firing position and is committed to fire on a prearranged target on call.
 - (b) The equipment has been fully

checked out and firing procedures completed so that the section is prepared to receive the command "Fire".

- (c) The firing section can remain in this status until completion of the mission or until the tactical situation dictates moving.
- (d) When the firing section receives the command "Fire", the rocket is fired and the mission completed.

20. Liaison

a. The battalion with a mission of general support has no inherent responsibility for establishing liaison; however, the mission may be modified to include establishing liaison with the next higher artillery headquarters. If the battalion has a general support-reinforcing tactical mission, liaison is established with the headquarters of the reinforced artillery unit. When liaison must be established with a reinforced artillery unit in addition to the next higher headquarters, additional personnel and equipment must be provided from the battalion resources. For duties of the liaison officer, see paragraphs 6b(3) and 15b.

b. The LITTLE JOHN battalion commander maintains command liaison with the next higher artillery headquarters and with the reinforced artillery unit. He will make recommendations to the next higher artillery headquarters concerning possible position areas from which the battalion can support operation.

c. The need for liaison is increased and of particular importance in internal defense and internal development assistance operations, especially when the battalion is tasked with conducting military civic action and other internal defense and internal development assistance projects in addition to providing fire support to U.S. host country (HC), and/or third country forces.

CHAPTER 5

RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

21. General

a. The general location of position areas is indicated by higher headquarters. The LITTLE JOHN battalion commander reconnoiters for subordinate elements, choosing specific positions and routes for movements, communication, and survey control. Wide separation of selected battery positions may be necessary to insure adequate target coverage and to achieve sufficient dispersion of units.

b. The normal method of securing information on routes and position areas is a map reconnaissance verified by a ground reconnaissance. Aerial reconnaissance is always desirable, and, in the absence of maps or aerial photographs, it is a necessity. Since the battalion has no organic aviation, Army aircraft for this purpose are obtained through higher artillery headquarters. Without aerial reconnaissance, the commander of the LITTLE JOHN battalion will be handicapped in obtaining timely information on which to base recommendations for new position areas or firing positions.

c. Because the battalion is a high priority target for enemy attack, all possible measures are taken to avoid disclosure of its location during any phase of reconnaissance, selection, or occupation of position (RSOP). Commanders must be constantly aware of the necessity for concealment. To assist in maintaining secrecy, battalions or elements thereof take maximum advantage of movement during darkness, inclement weather, and times of poor visibility.

d. Battalion commanders should be aggressive in the search for position areas and routes into these areas. They may frequently have to request priority for certain areas from the force artillery commander.

22. Battalion Position Areas

a. The force artillery commander assigns the

general unit position area. The position area includes firing positions. When considerable dispersion and movement are required to accomplish the mission, the battalion commander may be required to request additional areas from the force artillery commander for additional firing positions. The battalion commander is responsible for making a continuous study of the situation in order to make recommendations on position areas and routes (FM 6-20-2) to the force artillery commander.

b. The battalion commander deploys the elements of his battalion within the assigned position area in a manner that will best accomplish his mission.

c. In internal defense assistance and cold war operations, the battalion may occupy positions which are permanent or semi-permanent in nature and from which it may support most operations in a given area. For security and defense reasons, the entire battalion may be located in one position or subordinate elements (battery/sections) may be collocated with other units/headquarters for wider fire support coverage as well as for security and defensive reasons.

23. Employment of Subordinate Elements

Enemy capabilities and policies of higher headquarters will dictate the minimum and maximum distances between elements of the LITTLE JOHN battalion.

24. Position Areas for Subordinate Elements

The battalion commander selects general areas for his subordinate elements based on his mission, the area he has been assigned, and the considerations outlined in FM 6-20-2. He normally assigns the duties of detailed reconnaissance and selection of portions to his staff and

battery commanders. In assigning an area to a subordinate element, he must consider the following points:

a. *Enemy Capability for Attacking the Position.* In many cases, the commander will have to weight the capabilities of the enemy for ground attack by counterbattery, and air delivered means. After weighing these capabilities, he must determine the appropriate amount of dispersion required to accomplish his mission.

b. *Type of Terrain That Is Being Occupied.* Flat terrain with little cover may require that the unit deploy over a large area, or the terrain may be so rugged that the unit is forced to close in to be capable of supporting fires. Rugged terrain may also offer some measure of protection against counterbattery attacks; however, the limitations imposed on the quadrant elevation must be considered.

c. *Amount of Available Natural Camouflage.* Maximum use must be made of existing natural camouflage. This may influence the commander in his choice of area for a particular subordinate element.

d. *Mission and Area To Be Covered By Fire.* Although the firing elements are not designed to operate independently for extended operations, a mission requiring wide fire coverage could force the commander to select positions and methods of employment which widely disperse the firing elements.

e. *Survey Control.* The time required to provide the necessary survey control should always be a consideration. Other considerations being equal, the firing points should be located as close to available survey control points as possible to allow timely completion of survey.

25. Headquarters and Service Areas

The headquarters battery commander selects the location of the various battery installations within the limits of the area described by the battalion commander. Close coordination is necessary with the battalion S3 and S4. In every situation, the positions of subordinate elements are selected so that the operational and support elements can best fulfill their assigned functions. Local defense requirements are an essen-

tial consideration. The discussions in FM 6-20-2 and FM 6-140 on reconnaissance, selection, and occupation of position by a headquarters battery are generally applicable.

26. Selection of Firing Positions

The battery commander of the firing battery is responsible for selecting firing positions within the areas assigned by the battalion commander. Since a number of widely separated positions may be required, the battery commander normally decentralizes the detailed reconnaissance and positioning of launchers to the firing platoon commanders. The battery commander must insure that—

a. The locations selected are consistent with the commander's plan of deployment and are defensible.

b. Timely survey control can be extended to the exact location selected for the launcher.

27. Firing Position

The firing position normally contains the LITTLE JOHN launcher, two 1/4-ton trucks, two 3/4-ton trucks, two transport assembly carts (trailers), 11 men, and the necessary section equipment. Several firing positions should be selected. In selecting a firing position, the following items should be considered:

a. The position must have an accessible route for a launcher transporting an assembled rocket.

b. The rear of the launcher position should be clear of excess dry brush, tall grass, and other materials which may ignite when the rocket is fired.

c. Cover and concealment should be available.

d. The slope of the terrain at the launcher position cannot exceed 10° (178 mils) longitudinally nor 5° (86 mils) laterally.

e. For additional considerations peculiar to internal defense assistance and cold war operations, see FM 6-20-1.

28. Route Reconnaissance

The battalion commander may use Army aviation, if available, for route reconnaissance. In

some situations, aerial reconnaissance may be a necessity, especially in fast-moving situations and in rugged terrain. Internal defense assistance operations security requirements will often limit the performance of route reconnaissance to aerial means. The discussion of route reconnaissance in FM 5-36 and in FM 6-20-2 apply generally to the LITTLE JOHN battalion.

29. Displacement

a. The battalion normally displaces on order of the force artillery commander. However, the unit commander is responsible for making a

continuous study of the situation in order to make recommendations on displacements to the force artillery commander. He should advise the force artillery commander on positions and on routes, method and time of displacement.

b. The firing elements of the battalion may displace on order or authority of the battalion commander for the purpose of passive defense against counterbattery. The force artillery commander or his staff are kept informed of such displacements when fire capabilities are affected or when such displacement will move the unit outside its assigned position area.

CHAPTER 6

ORGANIZATION OF POSITION

30. General

a. This chapter covers the composition and arrangement of elements within the unit position areas. For a discussion of other aspects of organization of position, such as security and survey, see chapters 7 and 8, respectively. For a discussion of these topics as they are influenced by internal development and internal defense assistance or cold war operations, see FM 31-16 and FM 31-22.

b. The organization of a position includes those operations necessary for delivery of fire. Operations required to deliver fire as soon as possible after occupying the position have first priority. These operations include checking out rocket and warhead section, assembling the rocket, loading the rocket on the launcher, and laying the launcher.

c. Battalions prepare new positions prior to occupation as completely as time allows. All possible measures are taken to avoid disclosing the position to the enemy. All personnel must be continuously aware of the necessity for concealing the positions from both air and ground observation. When possible, newly selected position areas are prepared during darkness or periods of poor visibility to assist in maintaining security. This preparation includes the erection of the necessary camouflage nets and the digging of personnel and materiel shelters.

31. Battalion Command Post Area

The battalion command post area will normally be a part of the headquarters and service area and will usually include the fire direction center. The discussion in FM 6-20-2 and FM 6-140 on organization of a battalion command post area is generally applicable to the LITTLE JOHN battalion.

32. Headquarters and Service Area

a. The discussion in FM 6-140 on organization of the headquarters battery area and the service battery area generally is applicable to the headquarters and service area of a LITTLE JOHN battalion. The ammunition support requirement for this unit is a major consideration in assuring that adequate local security is provided.

b. The location of the assembly and transport area should be convenient to the firing elements. It should include an area for vehicle parking, an area for rocket assembly and checkout, a loading area, and an area for rocket storage. The location of the storage area within the assembly and transport area is governed primarily by security considerations.

c. When the firing platoons operate independently at remote distances from each other, a separate assembly and transport area is established for each platoon to include, as a minimum, a rocket storage area.

33. Firing Elements

a. General. The location of the launcher, together with the centerline of the sector of fire and the blast danger area (fig. 6), determines the general arrangement of the firing position. The exact location of each element varies with the terrain and natural concealment available. The danger area to the rear of the launcher (fig. 6) may be reduced to 200 meters or less by the battalion commander when terrain conditions permit. Under no condition may personnel be permitted within the danger area at the time of firing. See AR 385-62, TM 9-1100-212-12, and TM 9-1340-204-12 for additional safety requirements.

b. Firing Section Position.

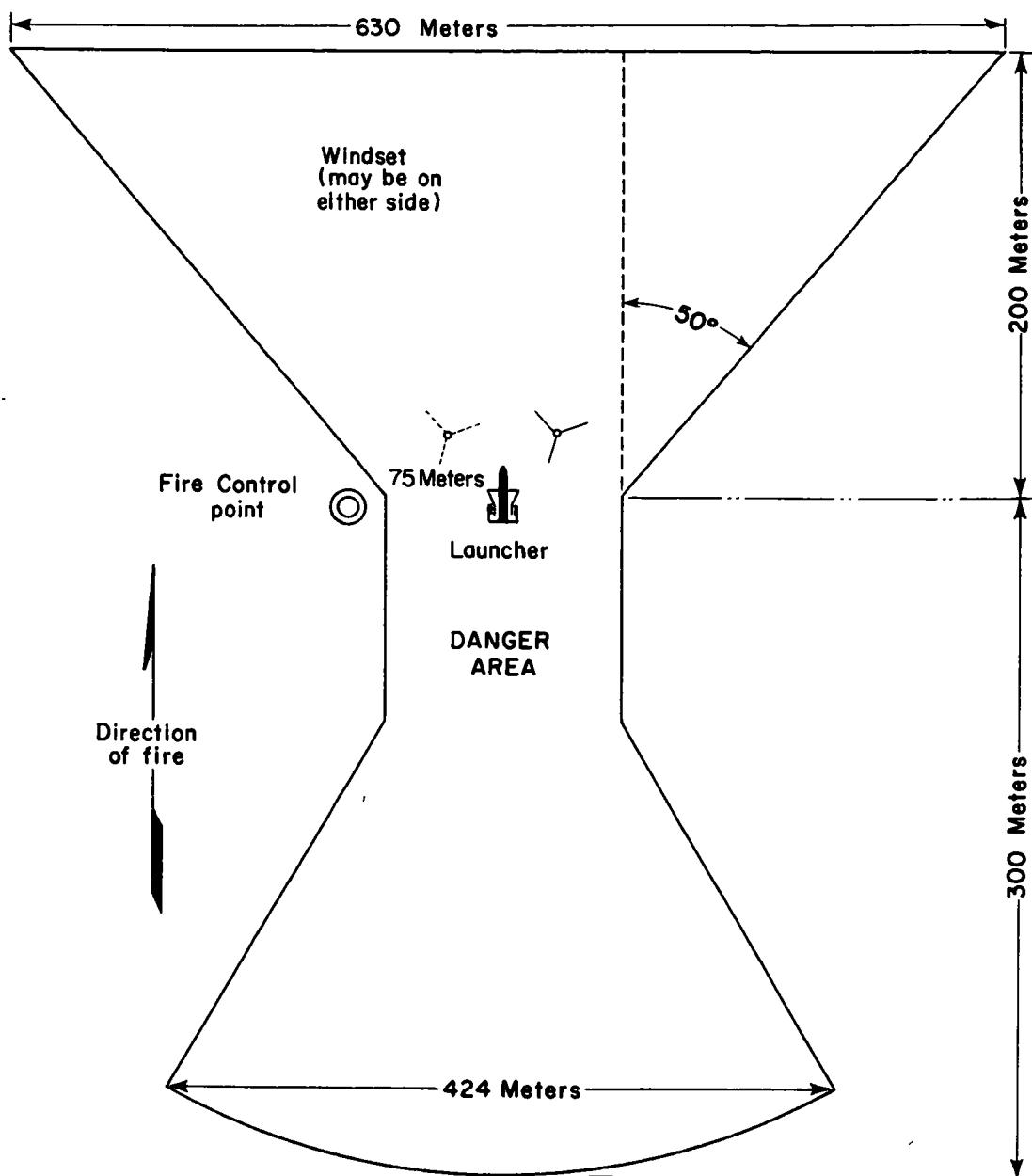


Figure 6. Type firing section position.

- (1) A firing section position (fig. 6) contains the fire control point (FCP), a launcher with a rocket, a wind measuring set, test equipment, and necessary communications equipment. A dispersal and loading area may be provided as required. Items subject to blast damage must be outside the danger area to the rear of the launcher.
- (2) The firing section positions the launcher so that the sight mount is over the survey stake. The fire control point is prepared approximately 75 meters to either flank of the launcher. The wind measuring set is located approximately 50 meters in front of the launcher and a safe distance to the side (at least 25 meters).

CHAPTER 7

SECURITY

34. General

a. The subject of security may be divided into four general areas—physical security, document security, personnel security, and communication security. Each of the areas requires special command attention and supervision in a nuclear delivery unit. Initiative in the employment of security measures is necessary to maintain an effective fire capability against an enemy strong in artillery and tactical air or skilled in infiltration and guerrilla tactics. Deception contributes to effective security.

b. Organization of the LITTLE JOHN battalion position for local security consists of establishing an adequate warning system and providing for active and passive security measures. The nuclear delivery capability of the unit makes the battalion a high priority target for enemy attack. The most effective way for the enemy to counteract the effectiveness of the battalion is to prevent it from firing. It can be expected that the enemy will focus his counterbattery intelligence effort on locating battalion positions. The enemy can be expected to attack with every means at his disposal, including air strikes, counterbattery fire, forces employing guerrilla type actions, infiltration, and special ground and airborne striking forces. The enemy may make such attacks despite considerable loss to himself in personnel and materiel. Therefore, all possible active and passive security measures must be used (FM 6-20-2, FM 6-140, and FM 32-5). Particular attention must be given to passive air defense measures, especially camouflage of battalion positions.

c. Because of the requirement for operational and training material on nuclear weapons, the LITTLE JOHN unit must maintain a large file of classified documents. Commanders must ac-

tively supervise the unit security measures to insure that classified documents are maintained in compliance with the provisions of AR 380-5 and AR 380-150, and that personnel having access to such documents are aware of their responsibilities.

d. Commanders must take action to obtain the appropriate security clearance for all personnel requiring access to classified areas or material. These individuals must meet the standards of the army personnel security program. A continuous program of attention to and surveillance of critical personnel is a major consideration of the program. AR 611-15 lists additional criteria for selection and retention of personnel.

e. The military police provide specialized guidance or assistance to the commander on matters pertaining to physical security. See FM 19-30, which serves as a guide in developing physical security measures. Army intelligence personnel provide specialized guidance or assistance to the commander on all matters pertaining to personnel and document security.

f. When establishing security for his unit, the commander must keep the following principles in mind:

- (1) Security measures must *not* prevent timely accomplishment of the unit mission.
- (2) Security measures should *not* give a unit distinctive features which identify it as one having nuclear capability.
- (3) Security measures must prevent enemy actions from interfering with the timely accomplishment of the unit mission.
- (4) Security measures must preclude ac-

cess to classified material by unauthorized personnel during training as well as in combat. Identification of personnel requiring access to classified information and material will be based primarily on *visual recognition* of the person authorized access.

- (5) The security of classified materials will be accomplished as directed by appropriate Army regulations (app. I).
- (6) Security forces that may be provided by higher headquarters will be fully integrated with battalion defenses in position areas and during road marches. Security augmentations are required in areas where strong insurgent forces are a continuing threat.
- (7) Unless adequate security forces are provided, isolated elements of the battalion should establish positions in the vicinity of, and coordinate defense plans with, other troop units when tactically feasible.
- (8) Security considerations for movement of nuclear weapons are further clarified in AR 580-15 and AR 55-203.
- (9) For security of movement of chemical warheads, refer to TM 3-250.

35. Active Security Measures

a. Existing doctrine for the active defense of field artillery positions and march columns will be fully implemented (FM 6-20-2 and FM 6-140). The battalion must protect ammunition from enemy action and prevent access to classified material by unauthorized persons at all times. For specific precautions to be observed in the physical security of nuclear weapons, refer to AR 190-60 and for chemical munitions, refer to TM 3-250.

b. Preventing nuclear components and chemical warheads from falling into enemy hands is of primary importance. Commanders should make plans for the disposition of ammunition to prevent its capture in accordance with policies and instructions normally issued the battalion by or through the force artillery headquarters. If capture is imminent, if there is

no communication with higher headquarters, and if there are no instructions to the contrary, the senior military person eligible to exercise command in the battalion will order evacuation, firing, or destruction of ammunition in the following priority:

- (1) Evacuation of all components of nuclear weapons, chemical warheads, and related sensitive items is preferred in all cases and will be given first consideration with highest priority for evacuation of nuclear components. Capture of nuclear components by the enemy will be prevented by all means possible.
- (2) If evacuation does not appear possible, consideration will next be given to the possibility of firing the ammunition. Each battalion maintains current firing data for locations furnished by higher artillery headquarters for safely disposing of classified ammunition by firing. For disposing of nuclear warheads by firing, follow procedures in TM 9-1100-212-12. The senior officer present, as defined above, is responsible for insuring that the fires will not endanger friendly troops or friendly civilians.
- (3) If neither evacuation nor firing appears possible, the senior military person on the scene, as defined above, will order the destruction of the ammunition (c below).

c. Commanders will maintain a standing operating procedure for destruction of ammunition. Items will be destroyed only as a last resort or when directed by higher authority. Destruction will be carried out only on the order of the senior military person, as defined in b above, present in the unit. For details on destruction on nuclear ammunition, see FM 5-25 and TM 9-1100-212-12; for disposal of chemical agents, see TM 3-250.

36. Passive Measures for Defense

a. *General.* Existing doctrine for the passive defense of field artillery positions will be fully implemented (FM 6-20-2 and FM 6-140). Pas-

sive measures include camouflage and concealment, field fortifications (cover) for personnel and materiel, obstacles, and communication security.

b. Concealment.

- (1) In most positions, concealment is obtained by the use of camouflage nets supplemented by available natural concealment. FM 5-20 covers general principles of camouflage. Other field manuals in the FM 5-20-series cover camouflage of individuals, weapons positions, vehicles, command posts, supply installations, bivouacs, and field fortifications. Additional information may be found in TM 5-200.
- (2) Consideration must be given to the necessity for prevention of fires.
- (3) During marches, vehicles and other equipment which are peculiar to this battalion should be camouflaged to the maximum extent possible. Camouflage nets, canvas covers, standard vehicle bows with tarpaulins, and other field expedients should be used to camouflage this equipment. Such equipment should not be brought into battalion position area during daylight unless the mission necessarily dictates such actions.

c. Cover. Requirements for concealment usually conflict with the requirements for field fortifications of materiel against enemy fires. The problem of digging materiel shelters without violating camouflage discipline is extremely difficult. Battalion and battery officers must carefully weigh the advantages and disadvantages of camouflage versus cover for materiel as time permits. This operation should follow a plan which insures that camouflage discipline is not violated at any time. Digging should be done during darkness or under camouflage. The plan must provide for disposal of spoil and elimination of tracks. Both aerial observation and photography by the enemy must be considered.

d. Communications Security. Radio transmissions throughout the battalion are vulnerable to enemy interception and exploitation. Even before information is transmitted, direction-finding equipment can pinpoint the location and deployment of the battalion. Additionally, once the identity or type organization is determined through the contents of messages, continuous interception must be expected. The battalion must therefore be aware at all times of the threat posed by hostile intelligence efforts and must pursue a vigorous communications security program. Appropriate COMSEC rules are prescribed by FM 32-5.

CHAPTER 8

SURVEY

37. General

Each launcher position of the LITTLE JOHN battalion must receive survey control. It is also necessary to establish survey control for each additional firing position of the LITTLE JOHN unit.

38. Organization

The LITTLE JOHN battalion is organized with three fifth-order survey parties. The responsibilities of the survey officer are discussed in FM 6-2 and FM 6-20-2.

39. Survey Control

The survey officer should expedite the establishment of survey control for all designated primary and alternate firing positions. LITTLE JOHN battalions normally initiate survey operations from fourth-order (1:3,000) control points within 2,000 meters of the firing battery positions (and alternate positions). These higher order control points are established by the field artillery target acquisition battalion, supported unit survey parties, or topographic engineers, as appropriate.

40. Survey Requirements

- a. The survey section performs a fifth-order

(1:1,000) survey from the survey control point to those points requiring survey. The section determines and reports the following information to the fire direction center:

- (1) The grid coordinates and altitude of each launcher position.
- (2) The grid azimuth of an orienting line for each firing position.
- (3) The orienting angle for each firing position when applicable.

- b. The survey section must coordinate with the firing platoon concerning the physical locations of markers representing launcher locations, orienting stations, and ends of the orienting lines.

- c. An additional requirement for the survey section is to provide control to the Rawin Set, AN/GMD-1, in the meteorological section.

41. Survey Methods, Procedures, and Techniques

The methods of survey and the survey procedures and techniques discussed in FM 6-2 are utilized for survey operations performed by the LITTLE JOHN battalion.

CHAPTER 9

ADMINISTRATION AND LOGISTICS

Section I. GENERAL

42. General

The LITTLE JOHN battalion is both a tactical and an administrative organization. The battalion is responsible for those administrative and logistic functions prescribed for batteries in applicable Department of the Army publications. The responsibilities for administration and logistics as defined in FM 6-140 apply to the LITTLE JOHN battalion. The battalion commander establishes unit policies that are compatible with the operational and technical requirements established by higher headquarters.

43. Property Accountability

a. The battalion requisitions, receives, and accounts for supplies as prescribed in AR 735-5

and AR 735-35 for separate companies. The battalion supply section maintains one unit property book for the entire battalion. The S4 or properly designated property book officer has responsibility and accountability for property issued to the battalion. He acknowledges responsibility by accomplishing the certificates in the property books. Property book officers make a joint inspection of battalion property or appropriate hand receipts upon change of assignment.

b. The battalion supply section obtains hand receipts (AR 735-35) from individuals to whom property is issued.

c. All commanders have command responsibility for property accountability.

Section II. AMMUNITION HANDLING PROCEDURES

44. General

Handling procedures prescribed for LITTLE JOHN rockets are contained in TM 9-1340-209-12; otherwise, they are generally the same as those prescribed for other field artillery ammunition. A round of 318-mm rocket ammunition consists of the warhead section and rocket motor. The details of ammunition support procedures are contained in FM 9-6. For general information on drawing and transporting field artillery ammunition, see FM 6-20-2 and FM 6-140. For care, handling, preservation, and destruction of ammunition, see TM 9-1300-206. For information on movement procedures for nuclear weapons, see AR 55-203; for information on nuclear weapons, see AR 55-203; for information on nuclear accident contamination control, see FM 3-15. For information on movement of chemical weapons, see TM 55-602.

45. Functions

The LITTLE JOHN battalion has the following functions pertaining to ammunition:

a. Drawing LITTLE JOHN rounds from the special ammunition supply point (SASP) and transporting the ammunition to the battalion area. Conventional ammunition will be drawn from an ammunition supply point (ASP).

b. Transporting and storing a basic load of conventional ammunition plus the special ammunition load (SAL) (para 47).

c. Providing security for ammunition during transport and during storage in the battalion area.

d. Performing organizational maintenance on ammunition and associated handling and test equipment.

e. Drawing and storing spare parts and accessories authorized for the maintenance indicated in *d* above.

f. Performing prefire procedures.

g. Firing ammunition as directed by higher artillery headquarters.

h. Performing checks and rendering reports on classified materiel as required by pertinent regulations.

46. Ammunition Service

a. All 318-mm rocket ammunition is stored and issued by the special ammunition supply point (SASP) operated by the storage and issue platoon of the ordnance special ammunition direct support company. The SASP's normally are located in the corps area. The force commander specifies the quantity and type of ammunition to be stored by these SASP's, based on his special ammunition allocation.

b. The special ammunition general support units store nuclear warhead sections and rocket motors to issue to the SASP's which, in turn, issue the sections and motors to the LITTLE JOHN units. For certain tactical situations, including emergencies, mated or unmated rounds may be issued to units direct from special ammunition general support units.

c. The technical support section of the special ammunition direct support company renders technical assistance to the unit.

47. Drawing Ammunition

a. Drawing ammunition from a special ammunition supply point (SASP) is discussed in FM 9-6 and FM 101-31-1. The procedures used by the LITTLE JOHN battalion to draw ammunition from a SASP will be prescribed by the force SOP and theater directives. Battalion ammunition personnel should complete all arrangements for pickup in advance. Bat-

talion personnel must comply with security regulations established for ammunition and ammunition supply points. Responsibility and, when required, accountability for ammunition will be assumed by the unit representative upon acknowledging receipt of the items issued. Responsibility will include physical security.

b. The special ammunition load will specify the number of authorized warhead sections by type; the number may vary, depending on the operational plan, availability of weapons, anticipated employment, or other tactical considerations. Authority from the force commander to replenish the special ammunition load may be given concurrently with the authority to expend a nuclear weapon, in anticipation of its use, or, may be withheld until after expenditure of the weapon. See FM 9-6 and FM 101-31-1 for details pertaining to the distribution of nuclear ammunition.

48. Preparation of Ammunition

The assembly and transport section prepares rockets for immediate use as directed. Preparation of a rocket for immediate use generally includes the assembly of the warhead section to the motor body and checkout of the rocket and warhead section. For detailed information on how to prepare a LITTLE JOHN rocket nuclear warhead section for immediate use, see TM 9-1100-212-12.

49. Storage of Ammunition

a. Unless prohibited by higher headquarters, during maximum readiness under nuclear or threat of nuclear conditions, each battalion will have at least one rocket carrying a nuclear warhead section mounted on a launcher.

b. For further detailed information on storage requirements, see FM 9-6, FM 101-10-3, TM 9-110-212-12, TM 9-300-206, and TM 9-1340-204-12.

Section III. MAINTENANCE

50. General

a. A concentrated maintenance effort is required to keep the large amount of complex

materiel in the battalion operational. Command supervision of maintenance, a rigorous preventive maintenance program, and pre-

scribed organizational maintenance principles must be aggressively applied in this battalion (FM 6-20-2 and FM 6-140).

b. The categories of maintenance presently established are applicable to this battalion. The procedures used for repair, evacuation, and replacement of materiel are the same as those used in any other field artillery unit. The presence of classified materiel and special weapons equipment poses certain problems and requires compliance with appropriate regulations. Details of maintenance support are contained in FM 20-22 and FM 9-6.

51. Maintenance Service

The special ammunition general support units provide field maintenance support for nuclear warhead sections, chemical warheads, and special ammunition test and handling equipment. Defective items are evacuated through special ammunition direct support companies. Direct exchange is employed when possible.

52. Organizational Maintenance

a. Organizational maintenance within LITTLE JOHN battalions is similar to that for cannon field artillery battalions, except that

personnel of the assembly and transport section perform organizational maintenance on the complete round and associated test equipment.

b. The criteria for authorized maintenance operations on rockets and system-peculiar equipment are contained in maintenance allocation charts (MAC's). These charts are provided as appendixes to appropriate technical manuals and indicate the lowest category authorized to perform each maintenance operation. Each MAC also indicates the special tools required and contains remarks which further describe the maintenance operations. Personnel in the firing platoon of the firing battery perform organizational maintenance as required on the launcher, rocket, wind measuring set, and associated test and firing equipment.

c. The battalion radio mechanics, under the supervision of the battalion communication chief, perform organizational maintenance on all communication equipment in the battalion.

d. Technical manuals which provide instructions for operational and organizational maintenance include appendixes that list the basic issue items required for unit stockage, to include the quantity of each item authorized. See TM 38-750 for detailed information on the Army equipment records system.

CHAPTER 10

AIRMOBILE OPERATIONS

53. General

a. Airmobile operations are operations in which ground combat forces and their equipment move about the battlefield in aerial vehicles under control of the ground force commander. These operations usually are tactical operations limited in mission, range, and duration by the availability and capability of Army aircraft used to move the participating force.

b. The configuration of the materiel and the comparative ease of operation give LITTLE JOHN units airmobile capabilities. Equipment is light and easily maneuvered. Durability must be assured by safe and careful handling of equipment.

c. The increased mobility provided by helicopter movement has introduced almost boundless possibilities for employment of the LITTLE JOHN. This chapter is a guide for planning and executing airmobile operations utilizing helicopters.

d. Frequently a LITTLE JOHN Battalion will support a unit which occupies a number of separate brigade or battalion bases, or airheads in an airborne operation. The roads between these bases or airheads may be controlled by the enemy. In this case, transport of a LITTLE JOHN firing section from a central base to an outlying base for a specific fire mission and return will be made possible by using helicopters. Helicopters will also be required for advance reconnaissance and survey of such firing points.

54. Organizational Concept

a. For an airmobile operation, the LITTLE JOHN organization is not fixed but must contain the minimum necessary personnel and

equipment to load and fire a rocket, a reconnaissance party, and a survey party (unless survey is accomplished by the supported unit). Communication must be maintained between the firing position and the fire direction center, and with higher headquarters when required. Depending on the distance involved in the movement to the firing position, it may be necessary to establish radio retransmission stations, using helicopter or vehicle radios, to maintain FM communications. Normally, a liaison team from the transporting unit will be provided to the artillery unit to assist in the technical aspects of planning and executing an air movement.

b. When employed in support of internal defense assistance operations, the battalion may be augmented to provide for extensive participation in airmobile operations.

55. Operational Characteristics of Helicopters

a. There are three essential factors (fuel, range, and payload) governing the employment of helicopters. These three factors are variable and when one of them is changed, it will affect at least one of the others. It is essential that artillery personnel be aware of the capabilities and limitations of helicopters affecting operation as listed in *b* and *c* below.

b. Capabilities of helicopters which enhance the employment of LITTLE JOHN units include the following:

- (1) Helicopters possess a wide speed range, from 0 to approximately 120 knots.
- (2) Helicopters can fly safely and efficiently at low altitudes during periods of adequate visibility, using the terrain and vegetation for cover and concealment.

- (3) If landing zones permit, helicopters can be landed in the objective area in a tactical formation.
- (4) During night operations, helicopter lighting requirements are normally minimal, but vary dependent upon specific circumstances. Lighting requirements should be coordinated with the supporting aviation unit.
- (5) Airmobile operations normally can be conducted safely in weather minimums of 300 feet ceilings and $\frac{1}{4}$ mile visibility. Mountainous areas, narrow defiles, power lines, and populated areas present serious obstruction problems in marginal weather and may force an increase in acceptable ceilings and visibility.

c. Limitations of helicopters which interfere with or restrict the employment of LITTLE JOHN units include the following:

- (1) The load-carrying capability of helicopters decreases with increases in altitude, humidity, and temperature.
- (2) The fuel consumption rate of helicopters is high, imposing limitations on range and allowable cargo load.
- (3) Weight and balance affect flight control. Loads must be properly distributed to keep the center of gravity within allowable limits.
- (4) Engine noise may compromise security.
- (5) Night operations can be severely limited by rough terrain, poor lighting, poor maps and incomplete planning. The use of pre-mission intensive training by all crews, pre-mission reconnaissance by air, photo, and map when possible; and the use of pathfinders and portable radio homers are aids that should be used by the air and ground commanders prior to major moves.
- (6) At wind velocity above 10 knots normally affects the selection of the direction of approach and landing.
- (7) Atmospheric conditions causing freez-

ing precipitation (i.e., hail, snow, sleet, ice) to form on the rotor blades will impose restrictions on aircraft employment.

d. TM 57-210 contains information on aircraft capabilities which is suitable for initial planning. The aviation unit commander must be consulted for actual operational capabilities.

56. Comparison of Ground and Helicopter Transported Operations

a. In helicopter transported operations, the method of conducting reconnaissance and selection of position will vary with the type of operation being conducted. In the offense, physical reconnaissance of the position will frequently be precluded for reasons of surprise and security. Reconnaissance and selection is then limited to the use of maps and air photographs. On the other hand, in retrograde and defensive operations, physical reconnaissance usually is feasible and is conducted in accordance with established principles, utilizing air rather than ground transport. For reconnaissance and selection on cold war and internal development and internal defense operations, see FM 6-20-1, FM 31-16, and FM 31-22.

b. The LITTLE JOHN unit is normally divided into forward and rear echelons for helicopter operations. The forward echelon consists of the troops, supplies, and equipment needed in the forward area to accomplish the mission. The remainder of the unit is the rear, or followup, echelon.

c. The ground mobility of elements in the forward area is limited by the reduced number of vehicles normally airlifted. Although a thorough reconnaissance is consequently limited, the process of reconnoitering and selecting positions is accelerated due to the mobility of the aircraft and the resultant flexibility. The lack of vehicles dictates that the firing position be at, or adjacent to the landing site for each firing section.

d. Resupply operations are divided in the same manner as the tactical operation. Assault supplies are carried into the position area with the forward echelon. Followup supplies are those supplies delivered to the unit subsequent

to movement of the forward echelon and are either automatic (delivered on a preplanned schedule) or on call (held in readiness at the loading area to provide for emergencies throughout the operation).

57. Organization of Loads

A rocket, when transported by helicopter, can be carried on the launcher or the transport cart. When a firing position is to be occupied, the load should be carried in the configuration that will best facilitate the rapid occupation of position. The primary objective in organizing helicopter loads is to provide for the landing of personnel and equipment in the position area in such a manner as to enhance the success of the mission. FM 1-100, FM 6-57, TM 55-450-8, and the TM 55-1055-212-12-series manuals contain further information regarding helicopter transportable loads.

58. Night Operations

Since the LITTLE JOHN unit must be prepared to function both day and night, proficiency is needed in night airmobile operations. Night airmobile operations require a higher state of training than is necessary for daylight operations. Flight units are smaller and aerial routes should be more direct to facilitate navigation. Larger landing sites and a greater number of guides are required. The possibility of friendly and enemy use of artificial illumination, including infrared devices, must be considered when planning for a night operation.

59. Nuclear Warfare Considerations Affecting Operations

Airmobile forces can rapidly concentrate after having been dispersed for protection from the effects of friendly or enemy nuclear weapons. Exploiting forces can bypass obstacles created by a nuclear strike, whether their objective is within or beyond the target area. In

planning airmobile operations, the timing of nuclear explosions is important. Planners must consider the effect of the intense light on the pilots' eyes and the length of time residual radiation will be at dangerous levels. The danger of fallout from a surface burst must be considered in selecting approach routes and landing zones. When a landing zone is contaminated, dust stirred up by propellers and rotors may be hazardous. Alternate plans are prepared in case it is found that residual radiation dose rates are unacceptable in primary routes and landing zones.

60. Plans, Training, and Orders

a. The successful helicopter transported operation is predicated on proficient training and sound planning. The amount of airmobile training completed by the LITTLE JOHN unit influences the degree of planning required for a specific operation. Generally, the following plans are developed by working backward from the basic tactical requirement in the sequence indicated.

- (1) The plan, or concept, for accomplishing the mission, to include determination of the tactical requirements and the development of a logistical plan.
- (2) The landing plan, which indicates the sequence, time, and arrival of personnel and equipment.
- (3) The air movement plan, based on the landing plan.
- (4) The loading plan, based on the air movement plan.

b. Opportunities to employ airmobile forces to advantage come suddenly and must be acted upon at once. Unit SOP's covering the activities involved in airmobile operations make it possible for the unit commander to issue an abbreviated operations order with a valuable saving of time. For an overlay type abbreviated order, see appendix VI, FM 57-35.

CHAPTER 11

TRAINING

61. General

a. This chapter is a guide to assist the battalion commander in the effective training of his unit.

b. Included herein is general information on training objectives, conduct of training, and standards to be attained.

c. For appropriate training publications, see appendix I.

62. Objective

The objective of the training prescribed is to provide members of the battalion with a thorough knowledge of the tactics and techniques essential to efficient operation of the LITTLE JOHN battalion in all levels of combat.

63. Conduct of Training

a. Unit commanders conduct training in accordance with principles discussed in FM 21-5 and appropriate Army training programs. The application of prior instruction to current training must be emphasized throughout training. Training under the Army training program is culminated in an Army training test.

b. The necessity for developing leadership, initiative, and a sense of responsibility in non-commissioned officers must be kept in mind

throughout training. Noncommissioned officers should be utilized as much as possible to train their own sections. Unit officers should supervise and make frequent inspections to determine that status of training of individuals.

c. Realistic training is especially important. Mere simulation of essential operations because of safety, work involved, or complex nature of materiel must be avoided. Maximum use should be made of practical field exercises. Night training under blackout conditions must be stressed.

d. The various service schools conduct technical instruction to train key personnel of the battalion to perform their assigned duties. The remaining personnel receive training under the unit training program.

e. The final step in unit training is the annual Army training test (ATT). See ATT 6-175, FM 6-40-1, and AR 385-62 for purpose, scope, conduct, and safety when conducting an Army training test or service practice.

64. Standards to be Attained

The qualifications established by AR 611-201 should be used as guides for the standards to be attained by individuals. The LITTLE JOHN Army training test should be used as a guide for the standards to be attained by the unit.

APPENDIX I

REFERENCES

- (O) AR 55-203 Movement of Nuclear Weapons Components and Nuclear Weapons Materiel.
- AR 190-60 Physical Security of Atomic Weapons.
- AR 320-5 Dictionary of United States Army Terms.
- AR 320-50 Authorized Abbreviations and Brevity Codes.
- AR 335-60 Morning Reports.
- AR 380-5 Safeguarding Defense Information.
- AR 380-20 Military Security—Restricted Areas.
- AR 380-150 Security of Restricted Data.
- AR 385-40 Accident Reporting and Records.
- AR 385-62 Firing Guided Missiles and Heavy Rockets for Training, Target Practice, and Combat.
- AR 385-63 Regulations for Firing Ammunition for Training, Target Practice, and Combat.
- AR 525-30 Army Missiles.
- AR 580-15 Security Requirements for Nuclear Weapons.
- AR 600-20 Army Command Policy and Procedure.
- AR 611-15 Selection and Retention Criteria for Personnel in Nuclear Weapons Positions.
- AR 611-201 Manual of Enlisted Military Occupational Specialities.
- (O) AR 700-65 Nuclear Weapons and Nuclear Weapons Materiel.
- AR 735-5 Property Accountability—General Principles and Policies and Basic Procedures.
- AR 735-35 Supply Procedures for TOE Units, Organizations, and Non-TOE Activities.
- AR 750-5 Organization, Policies, and Responsibilities for Maintenance Operation.
- ATP 6-302 Field Artillery Rocket Units, HONEST JOHN and LITTLE JOHN Rocket.
- ATT 6-175 Field Artillery Missile Battalion (Battery), HONEST JOHN and LITTLE JOHN.
- DA Pam 310-series Military Publications Indexes.
- FM 1-100 Army Aviation.
- FM 3-10 Employment of Chemical and Biological Agents.
- (C) FM 3-10B Employment of Chemical Agents (U) (to be published).
- FM 3-12 Operational Aspects of Radiological Defense.
- FM 3-15 Nuclear Accident Contamination Control.
- FM 5-20 Camouflage, Basic Principles and Field Camouflage.
- FM 5-25 Explosives and Demolitions.
- FM 6-2 Artillery Survey.
- FM 6-10 Field Artillery Communications.

FM 6-15	Artillery Meteorology.
FM 6-20-1	Field Artillery Tactics.
FM 6-20-2	Field Artillery Techniques.
FM 6-40	Field Artillery Cannon Gunnery.
FM 6-40-1	Field Artillery HONEST JOHN/LITTLE JOHN Rocket Gunnery.
(S) FM 6-40-1A	Field Artillery HONEST JOHN/LITTLE JOHN Rocket Gunnery (U).
FM 6-57	Field Artillery Rocket, LITTLE JOHN with Launcher M34.
FM 6-140	Field Artillery Cannon Battalions and Batteries.
(S) FM 6-141-series	Nonnuclear Employment of Field Artillery Weapons Systems (U).
FM 9-6	Ammunition Service in the Theater of Operations.
FM 19-2	Military Police Support in the Field Army.
FM 19-25	Military Police Traffic Control.
FM 19-30	Physical Security.
FM 21-5	Military Training Management.
FM 21-6	Techniques of Military Instruction.
FM 21-30	Military Symbols.
FM 21-40	Small Unit Procedures in Chemical, Biological, and Radiological (CBR) Operations.
FM 21-48	Chemical, Biological, and Radiological (CBR), and Nuclear Defense Training Exercises.
FM 24-1	Tactical Communications Doctrine.
FM 24-18	Field Radio Techniques.
FM 24-20	Field Wire and Field Cable Techniques.
FM 29-22	Maintenance Operations in the Field Army.
FM 31-16	Counter guerrilla Operations.
FM 31-21	Special Forces Operations.
(S) FM 31-21A	Special Forces Operations (U).
FM 31-22	US Army Counterinsurgency Forces.
(S) FM 31-22A	US Army Counterinsurgency Forces (U).
FM 31-73	Advisor Handbook for Counterinsurgency.
(CM) FM 32-5	Communications Security (U).
FM 33-1	Psychological Operations, US Army Doctrine.
FM 41-5	Joint Manual of Civil Affairs/Military Government.
FM 41-10	Civil Affairs Operations.
FM 54-3	The Field Army Support Command.
FM 57-35	Airmobile Operations.
FM 100-5	Field Service Regulations—Operations.
(C) FM 100-20	Field Service Regulations—Counterinsurgency (U).
FM 101-31-1 and 3	Staff Officer's Field Manual; Nuclear Weapons Employment.
(S) FM 101-31-2	Staff Officer's Field Manual; Nuclear Weapons Employment (U).
FM 101-40	Armed Forces Doctrine for Chemical and Biological Weapons Employment and Defense.
TM 3-210	Fallout Prediction.
TM 3-220	Chemical, Biological and Radiological (CBR) Decontamination.
TM 3-250	Storage, Shipment, and Handling of Chemical Agents and Hazardous Chemicals.
TM 5-200	Camouflage Nets and Net Sets.
TM 5-236	Surveying Tables and Graphs.
TM 5-241-1	Grids and Grid References.
TM 6-230	Logarithmic and Mathematical Tables.

TM 6-300	Army Ephemeris.
TM 9-1100-212-20P	Organizational Maintenance Repair Parts and Special Tool Lists (illustrated parts breakdown): for Warhead Section, Atomic: M50 and M78, and M216 and Warhead Section, Atomic, Training: M99.
TM 9-1055-212-12	Operator and Organizational Maintenance Manual: 318-mm Rocket Launcher M34, 318-mm Rocket Cart M14, and Truck-Mounted 318-mm Rocket Handling Unit M572.
TM 9-1055-212-ESC 1	Equipment Serviceability Criteria for Launcher, Rocket 318-mm, M34.
TM 9-1055-212-ESC/2	Equipment Serviceability Criteria for Cartridge, Rocket: 318-mm, M14.
TM 9-1055-212-ESC/3	Equipment Serviceability Criteria for Handling Unit; 318-mm Rocket, Truck Mounted, M572.
(S) TM 9-1100-212-12	Operator and Organizational Maintenance Instructions (Prefire Procedures) XM50 and XM78 Warhead Sections and Warhead Section Atomic, Training: XM99 (U).
TM 9-1300-206	Care, Handling, Preservation, and Destruction of Ammunition.
TM 9-1340-204-12	Operator and Organizational Maintenance: 318-mm Rocket MGR-3A (M51) (LITTLE JOHN Rocket System).
TM 1340-204-12P	Operator and Organizational Maintenance Repair Parts and Special Tool Lists for Rocket, 318 millimeter: MGR-3A (M51) (LITTLE JOHN Rocket System).
TM 9-1900	Ammunition, General.
TM 9-1375-200	Demolition Materials.
TM 9-1950	Rockets.
TM 9-6920-214-12	Operator and Organizational Maintenance Manual, 318-mm LITTLE JOHN Training Rocket Set X3-G-76.
TM 10-500-51	Airdrop of Supplies and Equipment: Rigging 318-mm Rocket System.
TM 10-8340-202-10	Operators Manual: Tent for LITTLE JOHN Missile System; Tent, Frame-Type, LITTLE JOHN Conditioning System.
TM 11-6660-203-10	Operators Manual: Wind Measuring Sets, AN/MMQ-1, AN MMQ-1A, AN/MMQ-1B, and AN/PMQ-6.
TM 11-6660-203-20	Organizational Maintenance Manual: Wind Measuring Sets AN/MMQ-1, AN/MMQ-1B, and AN/PMQ-6.
TM 38-750	Army Equipment Record Procedures.
TM 55-602	Movement of Special Freight.
TM 55-1055-212-12-2	Air Transport of Supplies and Equipment: LITTLE JOHN Missile System, 318-mm Rocket Cart M14, Transported by U.S. Airforce Aircraft.
TM 55-1055-212-12-4	Air Transport of Supplies and Equipment: LITTLE JOHN Missile System, 318-mm Rocket Launcher M34, Transported by U.S. Airforce Aircraft.
TM 57-210	Air Movement of Troops and Equipment.
TOE 6-565T	Field Artillery Missile Battalion, Little John Rocket.

APPENDIX II

TABLES

Table I. Planning Factors for LITTLE JOHN Firing Operations

	(Time in minutes)	
	Day	Night
1 Computation of fire missions (add 10 minutes when second trajectory computation is required).	15	15
2 Decoding and disseminating fire mission	10	10
3 Assembly checkout of the rocket (includes applicable electrical tests)	15	20
4 Mating warhead section to the motor	5	7
5 Electrical checkout of rocket	3	5
6 Loading rocket on launcher	4	5
7 Firing sequence (includes installing igniter and final electrical connections and obtaining and placing wind correction on the launcher).	8	12
8 Occupation of firing position (organization of position and laying of launcher and windset).	10	13
9 Preparation of position prior to occupation	15	20
10 March order	3	4

Note. Reaction times will be reduced with the use of FADAC.

Table II. Time Sequence of LITTLE JOHN Firing Operations
(Time in Minutes)

Situations I through V are presented to illustrate typical LITTLE JOHN firing operations. These may be expanded to include other situations which may be anticipated by the unit.

Situation I—Unit in prepared position with occupation complete. Fire missions prearranged as to time and place. Ammunition is available at the unit.

Time at which firing can occur—

		Day Scheduled time (T)	Night Scheduled time (T)
First round (4 launchers)		Immediately*	
Second round (4 launchers)	(Remark 3)	T+12	T+17
	Loading rocket on launcher	(4)	(5)
	Firing sequence	(8)	(12)

If low level winds have been applied.

Situation II—Unit in prepared position with occupation completed. Fire missions prearranged for on-call request. Ammunition is available at the unit.

		Day	Night
First round (4 launchers)	(Remarks 1 and 5)	Call + 3	Call + 3
	Apply wind corrections and fire	(3)	(3)
Second round (4 launchers)	(Remarks 1 and 3)	Call + 15	Call + 20
	Time for first round	(3)	(3)
	Loading rocket on launcher	(4)	(5)
	Firing sequence	(8)	(12)

Situation III—Unit in prepared position with occupation completed. Fire missions on targets of opportunity. Fire missions received as indicated in remarks. Ammunition is available at the unit. Time from the receipt of fire mission until firing—

		Day	Night
First round	(Remarks 1, 3, and 4) -----	33	33
(2 launchers)	Decode and disseminate fire mission -----	(10)	(10)
	Compute fire mission -----	(20)	(20)
	Apply wind correction and fire -----	(3)	(3)
Second round	(Remarks 1, 3, and 4) -----	40	45
(2 launchers)	Time for first round -----	(28)	(28)
	Loading rocket on launcher -----	(4)	(5)
	Firing sequence -----	(8)	(12)

Situation IV—Firing element occupies prepared positions from march column. Executes fire missions prearranged as to time and place. Ammunition is available at the unit. Occupation should commence the indicated number of minutes prior to firing.

		Day	Night
First round	(Remark 1) -----	18	25
(4 launchers)	Occupation of position -----	(10)	(13)
	Firing sequence -----	(8)	(12)
Second round	(Remarks 1 and 3) -----	30	42
(4 launchers)	Time for first round -----	(18)	(25)
	Loading rocket on launcher -----	(4)	(5)
	Firing sequence -----	(8)	(12)

Situation V—Unit in prepared position with occupation completed; prearranged fires or targets of opportunity. Ammunition availability is the critical consideration (*a* and *b* below).

a. Ammunition Not Available at the Firing Position or Immediate Area. Assume that all ammunition is received at the same time. Receipt may be at a drop zone (parachute delivery), unit storage area, or vicinity of the firing position (helicopter delivery). From the time of the receipt of ammunition until firing, allow—

		Day	Night
First round	(Remarks 1 and 2) -----	27	37
(1 launcher)	Assembly checkout of the rocket -----	(15)	(20)
	Loading rocket on launcher -----	(4)	(5)
	Firing sequence -----	(8)	(12)
Second round	(Remarks 1 and 3) -----	39	54
(1 launcher)	Time for first round -----	(27)	(37)
	Loading rocket on launcher -----	(4)	(5)
	Firing sequence -----	(8)	(12)

b. Warhead Section Not Available at Firing Position. Assume that all warhead sections are received at the same time. From time of receipt of warhead section until firing, allow—

		Day	Night
First round	(Remarks 1, 6, and 7) -----	13	19
(1 launcher)	Mating warhead assembly -----	(5)	(7)
	Firing sequence -----	(8)	(12)
Second round	(Remarks 1, 3, and 7) -----	25	36
(4 launchers)	Time for first round -----	(13)	(19)
	Loading rocket on launcher -----	(4)	(5)
	Firing sequence -----	(8)	(12)

Remarks:

1. It is assumed that the requests for both rounds are received simultaneously. Example in situation II—If there is a time lapse of 30 minutes between the first and second request, then the second round could be fired in 3 minutes.

2. Travel time is not included. When travel time is known, it must be added to get complete time.

3. If it is necessary to reposition the launcher (relay, etc.), add 4 minutes for day and 6 minutes for night.

4. Not more than two launchers can be used for both

rounds for targets of opportunity because of fire direction limitations and the time required for data computation. To fire 4 launchers, add 20 minutes for both day and night.

5. Removal of thermal insulating blankets is not included in times indicated for firing on call missions.

6. Assume rocket motor is loaded on the launcher and that the mating fixture is used to complete mating operation.

7. Warhead inspections and test are not included in times. Certain steps are completed prior to mating and remaining steps, as applicable to the type warhead, are completed concurrently with the firing sequence.

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By Order of the Secretary of the Army:

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

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